

A revision of *Campnosperma* (Anacardiaceae) in Madagascar

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ABSTRACT

The genus *Campnosperma* Thwaites (Anacardiaceae) is treated as consisting of four species in Madagascar. Two new species are described, illustrated and compared with *C. micrantheum* Marchand, the only species described in the Flore de Madagascar, and the recently described *C. parvifolium* J.S. Miller & Randrianasolo. A key and descriptions are provided and distribution, habitat and phenology are also discussed. *Campnosperma lepidotum* is distinguished by its leaf undersurface covered with overlapping lepidote scales, and *C. schatzii* is marked by its relatively long pedicel and smaller leaf size.

KEY WORDS

Campnosperma,
Anacardiaceae,
lepidote scales,
Madagascar.

RÉSUMÉ

Le genre *Campnosperma* Thwaites (Anacardiaceae) comprend quatre espèces à Madagascar. Deux nouvelles espèces sont décrites, illustrées et comparées à *C. micrantheum* Marchand, la seule espèce du genre décrite dans la Flore de Madagascar, et à *C. parvifolium* J.S. Miller & Randrianasolo, une espèce récemment décrite. Une clé de détermination, les descriptions des espèces, ainsi que des informations sur leurs distribution, habitat et phénologie, sont données. *Campnosperma lepidotum* se distingue par la surface inférieure des feuilles couverte d'écailles lepidotes superposées, et *C. schatzii* se différencie par le pédicelle de la fleur qui est relativement long et ses feuilles qui sont de petite taille.

MOTS CLÉS

Campnosperma,
Anacardiaceae,
écailles lépidotes,
Madagascar.

The genus *Campnosperma* comprises 10 species of trees and shrubs, with six occurring in tropical Asia and one each reported from Madagascar, the Seychelles, Panama, and Brazil. Only a single species of *Campnosperma* was reported in the Flore de Madagascar (PERRIER DE LA BÂTHIE 1946), although a second Malagasy species was recently described from the Marojejy massif (MILLER & RANDRIANASOLO 1998). The reexamination of numerous botanical collections made since the preparation of PERRIER DE LA BÂTHIE's (1946) treatment indicates that the Malagasy populations of *Campnosperma* are best treated as four morphologically distinct species. Two of these are newly described. *Campnosperma* species are usually large canopy trees, and can occupy a diverse type of habitats, swamps to forests on well drained soils, ranging from sea level to ca. 1600 m (DING HOU 1978). The Malagasy species are distributed from the wet and

sandy eastern coastal forests at sea level to pre-montane and montane rainforests up to 1700 m.

Campnosperma species are trees, with simple, entire, petioled, spiral leaves which on both surfaces very often have minute, peltate or lobed scales. They have axillary, paniculiform inflorescences with unisexual or bisexual flowers. Their most distinctive characters in the family are the number of stamens which is twice the number of petals with the epipetalous ones shorter than those alternipetalous, and the incomplete 2-celled ovary which when developed to fruit has very hard and bony endocarp and curved seed (DING HOU 1978).

CAMPNOSPERMA Thwaites

Hooker's J. Bot. Kew Gard. Misc. 6: 65 (1854).

TYPE.—*Campnosperma zeylanicum* Thwaites.

Key to the Malagasy species of *Campnosperma*

- 1. Leaves less than 7 cm long and 3.3 cm wide; shrubs or trees of high elevation (ca. 900 m-1800 m) *C. parvifolium*
- 1'. Most of the leaves greater than 7 cm long and 3.3 cm wide; trees of low to mid-elevation (sea level ca. 1200 m) 2
- 2. Leaves with a dense layer of lepidote scales completely concealing the lower leaf surface or nearly so *C. lepidotum*
- 2'. Leaves with lepidote scales below, but not forming a dense, continuous layer 3
- 3. Pedicels glabrous, 0.8-2 mm long; leaves 4.5-14.5 cm long, 1.5-5.5 cm wide *C. schatzii*
- 3'. Pedicels pubescent, 0.3-0.5 mm long; leaves 11-25 cm long, 4-9 cm wide *C. micranetium*

***Campnosperma lepidotum* Capuron ex
Randrianasolo & J.S. Miller, sp. nov.**

Haec species a congeneris madagascariensibus similis sed ab eis lamina foliari subtus squamis lepidotis imbricatis oblecta differt.

TYPE.—*SF 8702, Capuron, Madagascar, Antsiranana, forêt orientale (limite supérieure); Massif de l'Ambohitsitondroina à l'est de Mahalevona (NW de la presqu'île Masoala), ca. 900 m, 4 Dec. 1953, fl., yg, fr. (holo-, P; iso-, MO, TEF).*

Functionally dioecious trees, 15-30 m tall, the young branches glabrous. The leaves simple, per-

sistent, coriaceous, very often clustered at the end of branches; blades obovate, 10-21.5 cm long, 4.4-10 cm wide, the apex somewhat rounded or emarginate, the base decurrent cuneate, the margin entire, slightly revolute; the adaxial surface glabrous and very sparsely lepidote, the abaxial surface covered completely with lepidote scales forming a distinct maroon layer, the venation pinnate, brochidodromous, prominent below especially the midvein, the secondary veins more or less parallel, more perpendicular to the midvein toward the leaf base; petioles 0.8-14 mm, canaliculate on the adaxial surface, waxy, lepidotic and with very sparse hairs.

Inflorescence a subterminal paniculiform raceme, borne in the very upper leaf axils, 3.5-19 cm long, the branches densely lepidotic with sparse stellate hairs, each flower subtended by a deltoid bract, 0.5-0.6 mm long, 0.5-0.6 mm wide. Flowers morphologically bisexual but apparently functionally unisexual, small, pedicels 0.5-0.8 mm long; sepals 4, shallowly deltate, valvate, 0.7-1 mm long, 1-1.2 mm broad, glabrous or glabrescent on outside; petals 4, ovate, imbricate, 1.2-2 mm long, 1-1.2 mm wide, glabrous; stamens 8, 4 alternipetalous and 4 epipetalous,

0.7-1.5 mm and 0.5-0.8 mm respectively in male flowers, much shorter and sterile in female flowers, inserted basally on the outer surface of the disk, flattened and broadened at the base, the anthers ovate, basifixed, introrse, with longitudinal slits, 0.2-0.5 mm long; disk more annular and cupiliform in female flower, dish-shaped and crenulate in male flowers; ovary asymmetric, densely lepidotic, widely ovate to widely depressed ovate, 0.5-0.8 mm long, 0.3-0.5 mm wide, very reduced and sterile in male flowers, the style very short or obscure, the stigma subdiscoidal.

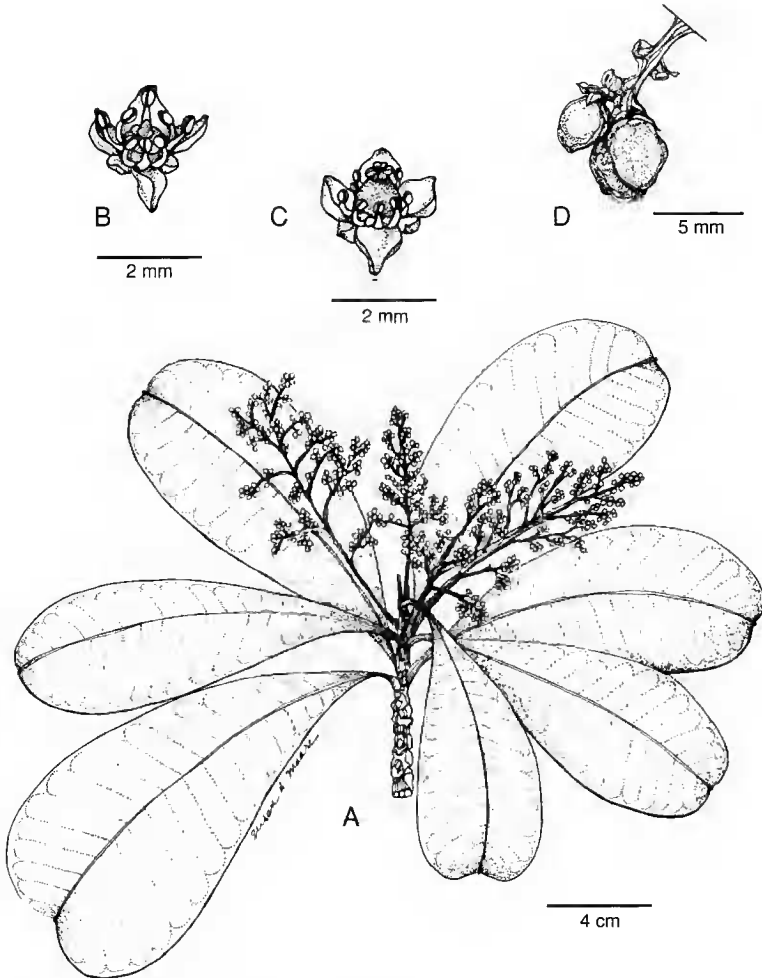


Fig. 1.—*Camposperma lepidotum*: A, branch with leaves and inflorescence; B, male flower; C, female flower; D, fruits.

Young drupes covered with lepidote scales, incompletely 2 celled filled by a single curved embryo, endocarp very hard.—Fig. 1.

ECOLOGY, PHENOLOGY AND DISTRIBUTION.—This species occurs in northeastern Madagascar, in rainforest between 900 and 1150 m elevation, where precipitation can be high as 2000 mm per year. It has been collected in flower in December and early January.

The genus *Campnosperma* is characterized by the presence of scales on their surfaces (DING HOU 1978). This species differs markedly from the other *Campnosperma* species by the undersurface of the leaves being densely covered by overlapping lepidote scales (Fig. 2B). It is similar to *C. micranteium* in leaf size, inflorescence pattern and floral characters, however, this latter has much fewer and widely spaced lepidote scales.

PARATYPES.—MADAGASCAR: *Cours 3668*, Antsiranana; au pied de l'Anjanaharibe, 850 m, 16 Dec. 1950, yg. fr. (P, TAN, TEF); *Cours 4777*, Itinéraire de Didy à Brickaville, fl. (MO, P); *Humbert et al. 24532, 24591*, massif de l'Anjanaharibe (penes et sommet Nord) à l'ouest d'Andapa (haute Andramonia, bassin de la Lokoho: Nord-Est), forêt ombrophile sur gneiss et granite, 14°40'S, 49°31'E, 900 m, 10 Dec. 1950-3 Jan. 1951, yg. fr. (MO, P); *SF 925, Capuron*, massif de l'Anjanaharibe (W district Andapa), Campement n° 2, 900 m, 16 Dec. 1950, yg. fr. (MO, P, TAN, TEF); *SF 925bis, Capuron*, est (confins de centre); massif de l'Anjanaharibe, à l'ouest d'Andapa, 900 m, 16 Dec. 1950, yg. fr. (MO, P, TAN, TEF); *SF 8719, 8720, Capuron*, forêt orientale de cimes: massif de l'Ambohitsitondroina de Mahalevona (NW de la presqu'île Masoala), vers 1100-1200 m, fl. and fr. (P, TAN, TEF); *SF 8856, Capuron*, forêt orientale, à sa limite supérieure; massif de Beanjada (au Nord de la presqu'île Masoala), 1150 m, 3 Jan. 1954, fl. (MO, P-2 sheets, TAN, TEF).

Campnosperma micranteium Marchand

Des Térébinthacées et de ceux de leurs produits qui sont utilisés en pharmacie: 175 (1869); A. Grandidier, Hist. Nat. Mad., Bor. Atlas II, t. 231 (1886).—Type: *Boivin s.n.*, Madagascar, Toamasina: Sainte Marie, 9 Oct. 1850, fl. (holo-, P!).

Functionally dioecious trees 10-25 m tall, young twigs waxy, glabrous, sometimes with lenticels. The leaves simple, persistent, coriaceous; blades obovate or oblanceolate, 11-25 cm long,

4-9 cm wide, the apex emarginate, retuse or rounded, the base decurrent cuneate, the margin entire and revolute, the adaxial surface glabrous, the abaxial surface with evenly distributed lepidote scales, the venation pinnate, brochidodromous, the midvein prominent undersurface; perioles 3-7 mm, shallowly channeled, glabrous.

Inflorescence an axillary or subterminal raceme paniculiform, clustered at the very end of branches (as well as the leaves sometimes), 9-20 cm long, covered densely with stellate hairs mixed with sparse lepidote scales, each flower subtended by a deltoid to shallowly triangular bract, ca. 1 mm long and 0.5-1 mm wide. Flowers morphologically bisexual but functionally unisexual, very small ca. 1.5 mm long, pedicels 0.3-0.5(-1) mm long, glabrous; sepals 4, deltate, triangular or depressed ovate, valvate, glabrous, 0.5-0.6 mm long and 0.5-1 mm wide; petals 4, ovate, imbricate, glabrous, 1-1.5 mm long, 0.5-1 mm wide; stamens 8, 4 alternipetalous greater in size, 4 alternisepalous much shorter, 0.8-1 mm and 0.5 mm long respectively in male flowers, staminodes ca. 0.8-1 mm long in female flowers, the filaments flattened and broader at the base, the anthers ovate or subglobose, basifixed, introrse, opened with longitudinal slits, 0.3-0.5 mm long; disk dish-shaped, cranulate, ca. 1 mm of diameter in male flowers, annular, cupiliform, edge crenulate, ca. 1-1.5 mm in diameter in female flowers; ovary rudimentary in male but ovate, very slightly asymmetric, 1-1.2 mm long, 0.8-1 mm broad, covered with lepidote scales in female; the style very short ca. 0.2 mm long, almost terminal; the stigma subdiscoidal variously lobed.

Very young drupes covered with lepidote and still bearing a subdiscoidal stigma, mature fruits slightly asymmetric, widely ellipsoidal, ca. 1 cm long and ca. 0.8 cm broad, with less lepidote scales outside, incompletely divided into two cells, filled by a single curved seed, endocarp hard.

ECOLOGY, PHENOLOGY AND DISTRIBUTION.—This species occupies similar habitat much like of that *C. schatzii* but more restricted to lower elevation (up only to ca. 600 m) where *C. schatzii* ranges up to ca. 1000 m nearby Moramanga.

Camposperma micranteium usually flowers from October to January but also recorded with flowers in April and August, and fruits from October to February.

Camposperma micranteium has leaves large as those of *C. lepidotum*, but differs from the latter by its spaced, smaller-sized lepidote scales on the undersurface (Fig. 2A). This species is distin-

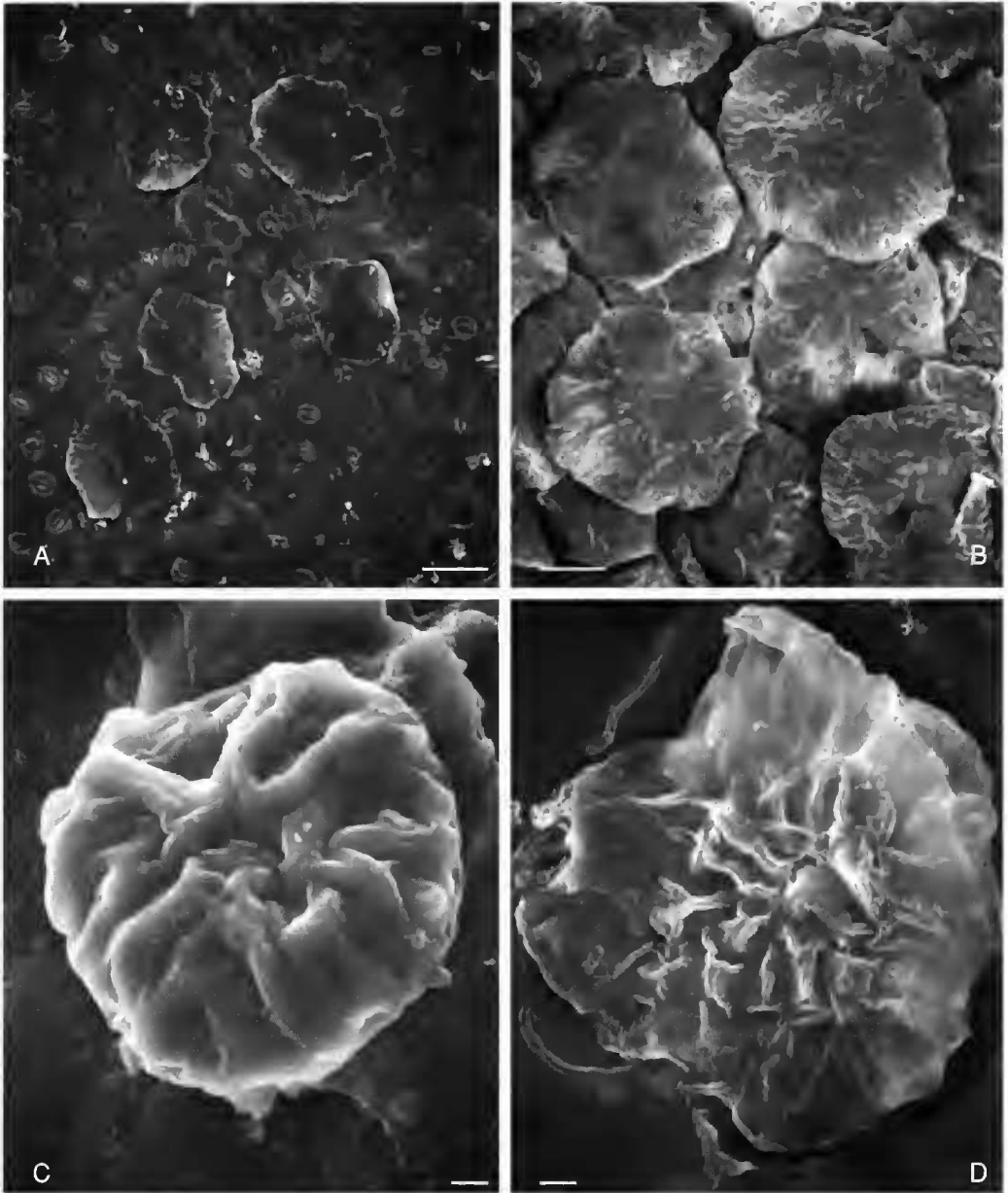


Fig. 2.—Scanning Electron micrographs of lower leaf surface of Malagasy *Camposperma* species: **A**, *C. micranteium*, scattered lepidote scales on lower leaf surface (Humbert 24414, MO), scale bar = 50 μ m; **B**, *C. lepidotum*, overlapping lepidote scales on lower leaf surface (Humbert 24535, MO), scale bar = 50 μ m; **C**, *C. schatzli*, individual lepidote scales (Schatz et al. 3419, MO), scale bar = 5 μ m; **D**, *C. parvifolium*, individual lepidote scales (Miller & Randrianasolo 4423, MO), scale bar = 5 μ m.

guished from *C. schatzii* by its relatively short pedicel (0.3-0.5 mm (rarely 1 mm) long versus 0.8-2 mm long).

One population from Fort-Dauphin (*SF 3352*, *Capuron*) differs from the typical *C. micrantheum* in its smaller leaf size and further study and additional collections may prove it to represent an additional distinct taxon.

MATERIAL EXAMINED.—MADAGASCAR: *Humbert 24414*, environs de Sambava (Cote Nord-Est), bois littoraux sur sables, marais à *Raphia*, 14°15'S, 50°09'E, 1-5 m, 28 Nov.-3 Dec. 1950, yg. fr. (MO, P); *Humbert 462*, 28 Jan. 1885, fl. (MO, P-2 sheets); *M. de Lastelle s.n.*, no locality, fl. (P); *Perrier de la Bâthie 3002*, Maroantsetra, Bois Côte Est, Aug. 1912, fl. (P); *96 R 233*, forêt Andriantantely, Amboditavolo, canton Lohariandava, district Brickaville, 600 m, 22 Aug. 54, fl. buds (MO); *RN 4528*, *Rakotonaiaina*, Amboditavana, district Toamasina, 11 Dec. 1952, fl. (P-2 sheets, TAN, TEF); *RN 5341*, *Rakotonaiaina*, Ambodiriana, district Toamasina, 12 Feb. 1953, fr. (MO, P); *RN 6927*, *Alfred Martin*, Ambodiriana, district Toamasina, 6 Jan. 1955, fl. (P, TAN, TEF); *RN 7703*, *Rakoto Jean de la Croix*, Angoedro, district Toamasina, 21 Oct. 1955, fl. (P, TEF); *SF 887bis*, *Capuron*, Raphiètes à Antongompahatra (au N de Sambava), 1 Dec. 1950, yg. fr. (P); *SF 3352*, Mandena, Fort-Dauphin, 5 Apr. 1951, fl. (MO, P-2 sheets, TAN, TEF); *SF 7980*, Piste Anosibe, Moramanga, fl. (MO, P, TAN, TEF); *SF 9013*, *Capuron*, forêts orientales: environs du col d'Antandrokolaka (entre Amboditavolo, bassin de la Fanerahana, et Morafeno, bassin de la Rantabe), Maroantsetra, 400 m, fr. (P, TAN, TEF); *SF 11473*, *Capuron*, Sambirano: Massif du Manongarivo, escarpements dominant la rive gauche de la basse Antsahankolaka, à l'Est d'Analalantsoa, Nov. 1954, fl. (P-2 sheets, TAN, TEF); *SF 14177*, *Capuron*, Tampolo Fénériver-Est, 28 May 1955, fr. (P, TAN, TEF); *SF 19810*, Fianarantsoa: Ambolomboro, Canton Ankarimbelo, district Port-Carnot, sur une pente exposition ouest à Vohimampay, 25 Oct. 1960, fr. (P, TAN, TEF).

***Camposperma parvifolium* Capuron ex J.S.**

Miller & Randrianasolo

Novon 8: 170 (1998).—Type: *Miller et al. 3529*, Madagascar, Antsiranana: Réserve Naturelle Marojejy, along the trail to the summit of Marojejy Est, below the third camp, lichen forest and exposed wind-swept ridges, 1100-1300 m, 14°26'S, 49°15'E, 10 Oct. 1988, fl. (holo-, MO; iso-, G, K, NY, P, TAN, TEF, US).

Shrub or small tree (2-)10-12 m tall, the young twigs densely covered with a mixture of lepidote scales and stellate hairs, later glabrescent and smooth or somewhat waxy. The leaves persistent, coriaceous; blades elliptic to obovate, (1.4-)2-6.7 cm long, (0.9-)1.5-3.3 cm wide, the apex retuse to rounded, the base obtuse to cuneate, sometimes briefly decurrent along the petiole for ca. 1-2 mm, the margin strongly revolute, entire, the adaxial surface glabrous, waxy, and lustrous, sometimes sparsely lepidote, the abaxial surface glabrous or occasionally with sparse stellate hairs, evenly lepidote (appearing gland-dotted), but the scales not overlapping, the venation brochidodromous, prominent and raised on both surfaces, the secondary veins 5-9, parallel, often only slightly more prominent than the dense reticulum of tertiary veins on the lower surface; petioles 3-8 mm long, stout, canaliculate on the adaxial surface, lepidote to densely stellate-pubescent.

Inflorescences borne in the upper leaf axils, sparsely-branched panicles or racemes (1-)3.3-6.3 cm long, the branches evenly to densely lepidote to stellate, each flower subtended by a triangular bract 0.5-1 mm long. Flowers functionally unisexual (the plants dioecious), small, on pedicels 0.5-1.5 mm long, ca. 1 mm in diameter; sepals 4, imbricate, deltate, ca. 0.5 mm long, lepidote; petals 4, imbricate, broadly elliptic, 1.5-2 mm long, ca. 1 mm wide, glabrous or with an occasional lepidote scale on the exterior surface; stamens 8, the filaments inserted at the base of the disk, flattened and broader at the base, ca. 0.5 mm long, the anthers ca. 0.2 mm long; nectariferous disk annular and unevenly lobed; ovary ovoid, small and partially immersed in the annular disk, the stigma subdiscoidal.

Fruit drupaceous, broadly ellipsoid, 7-8 mm long, 5-6 mm broad, glabrous.

ECOLOGY, PHENOLOGY AND DISTRIBUTION.—This species occurs in cloud forests of Northeastern Madagascar, at 900 m and up. It is known only from the Marojejy massif and several nearby mountains of NE Madagascar, where it is often quite abundant on open, high-elevation, wind-swept ridges. It flowers in October-November and sets fruits in December.

Camposperma parvifolium differs from the other species of the genus in Madagascar in its much smaller leaves, smaller number of secondary veins, and lower leaf surface with scattered, small lepidote scales (Fig. 2D). It also has the smallest flowers of any of the Madagascar species in the genus.

MATERIAL EXAMINED.—MADAGASCAR: *Deroin & Badré 40*, Marojejy RNI 12, rive gauche de la Manantenina, versant sud de Beondroka, sylvie à lichens, 14°25'S, 49°50'E, 1040 m, 12 Nov. 1989, fl. (MO, P); *Humbert et al. 24783*, Antsiranana: massif de l'Anjanaharibe (pentes et Sommet Nord) à l'ouest d'Andapa, sylvie à lichens, 14°40'S, 49°26'E, 1600-1800 m, 10 Dec. 1950 - 3 Jan. 1951, yg. fr. (P); *Miller & Randrianasolo 4473*, Réserve Naturelle de Marojejy, western slopes and summit of Mt. Beondroka, lichen forest and open wind-swept ridges, 830-1210 m, 14°27'S, 49°47'E, 26 Oct. 1989, fl. (MO, TAN); *Miller & Randrianasolo 4683*, Réserve Naturelle de Marojejy, along the trail to the summit of Marojejy Est, N of Mandena, premontane forest, lichen forest, and exposed wind-swept ridges below the 3rd camp, 900-1300 m, 14°26'S, 49°46'E (MO, P, TAN); *Rakotomalaza et al. 871*, Réserve Naturelle Intégrale de Marojejy, 10.5 km NW of Manantenina, along tributary at head of Andranomifotra River, Campement 4, 1625 m, 14°26'24"S, 49°44'30"E (MO, P, TAN); *Rasoavimbahoaka 144* (MO, P, TAN); *SF 936*, *Capuron*, massif de l'Anjanaharibe (W d'Andapa), 1600 m, 23 Dec. 1950, yg. fr. (P- 2 sheets, TEF).

***Camposperma schatzii* Randrianasolo & J.S. Miller, sp. nov.**

Haec species a congeneris madagascariensisibus pedicello sat longo (0.8-2 mm) et foliis parvis (4.5-14.5 cm longis, 1.5-5.5 cm latis) distinguitur.

TYPE.—*Schatz et al. 3619*, Madagascar, Toamasina: Station Forestière Tampolo, 9 km N of Fénéry-Est. Plot 2. 17°17'15"S, 49°25'11"E, 27 Nov. 1994, fl. (holo-, MO; iso-, P, TAN).

Functionally dioecious trees, 5-12 m tall, young twigs waxy. The leaves simple, persistent, coriaceous, blades obovate to elliptic or oblanceolate to oblong, 4.5-14.5 cm long, 1.5-5.5 cm wide, the apex emarginate or retuse or rounded, the base decurrent cuneate, the margin entire, slightly revolute, the adaxial surface sparsely covered with lepidote scales, or waxy, glabrous, the

abaxial surface more densely covered with lepidote scales than the upper surface, also glabrous, the venation pinnate, brochidodromous, prominent undersurface, the secondary veins more or less parallel, sometimes more obtuse toward the leaf base; petioles (0.3-)0.5-1 cm long, shallowly canalicate, with lepidote and stellate hairs when young, glabrescent or glabrous when mature.

Inflorescence an axillary raceme paniculiform at the very end of branches, 4-14 cm long, the branches very often covered with lepidote scales and stellate hairs, sometimes glabrous, each flower subtended by a small triangular bract, ca. 1 mm long and 0.5 mm broad. Flowers functionally unisexual, small, pedicel 0.8-2 mm long, ca. 0.4 mm in diameter, sometimes few sparse lepidote scales on its surface; sepals 4, deltate, valvate, 0.5-1 mm long, 0.5-1 mm wide, sometimes sparsely lepidote on the exterior surface otherwise glabrous; petals 4, ovate, imbricate, 1-1.5 mm long, 0.8-1 mm wide, glabrous; stamens 8, 4 alternipetalous and 4 epipetalous much shorter, 0.8-1 mm and ca. 0.5 mm long respectively in male flowers, much shorter and sterile in female flowers, inserted at the base of outer surface of the disk, the filaments flattened and broader at the base, the anthers subglobose ovoid, basifixed, introrse, with longitudinal slits, 0.2-0.4 mm long; disk more annular and cup-shaped in female flowers, ca. 0.5 mm high, granulate, shallowly dish-shaped and also granulate in male flowers; ovary depressed ovate, asymmetric, ca. 0.7-0.8 mm long and ca. 1 mm broad, densely lepidote, very reduced and sterile in male flowers, the style very short, the stigma four lobed and diffuse.

Drupe very widely ovate, 5.5-8 mm long, 5-8 mm broad, covered with lepidote scales, incompletely 2-celled filled by a single curved embryo or seed, hard endocarp.—Fig. 3.

ECOLOGY, PHENOLOGY AND DISTRIBUTION.—This species occurs in a wide range of habitat from sea level to 1200 m. It is distributed from wet sandy coastal littoral forests to highland premontane rainforests. It has been collected in flower between October and December, and in fruit between December to February.

This species is distinguished by its relatively

long pedicel (0.8-2 mm). Compared to *C. leptodotum* and *C. micrantheum* its leaf size is much smaller (4.5-14.5 cm), and it differs from *C. parvifolium* in the length of the decurrency of its leaf base (1-2 mm in *C. parvifolium* vs. 5-10 mm in

C. schatzii). The lower leaf surface of this new species seemingly has similar sized lepidote scales as *C. micrantheum*, but they are fewer in number, and thus more widely spaced (Fig. 2C). *C. schatzii* is named in honor of George E. SCHATZ, whose

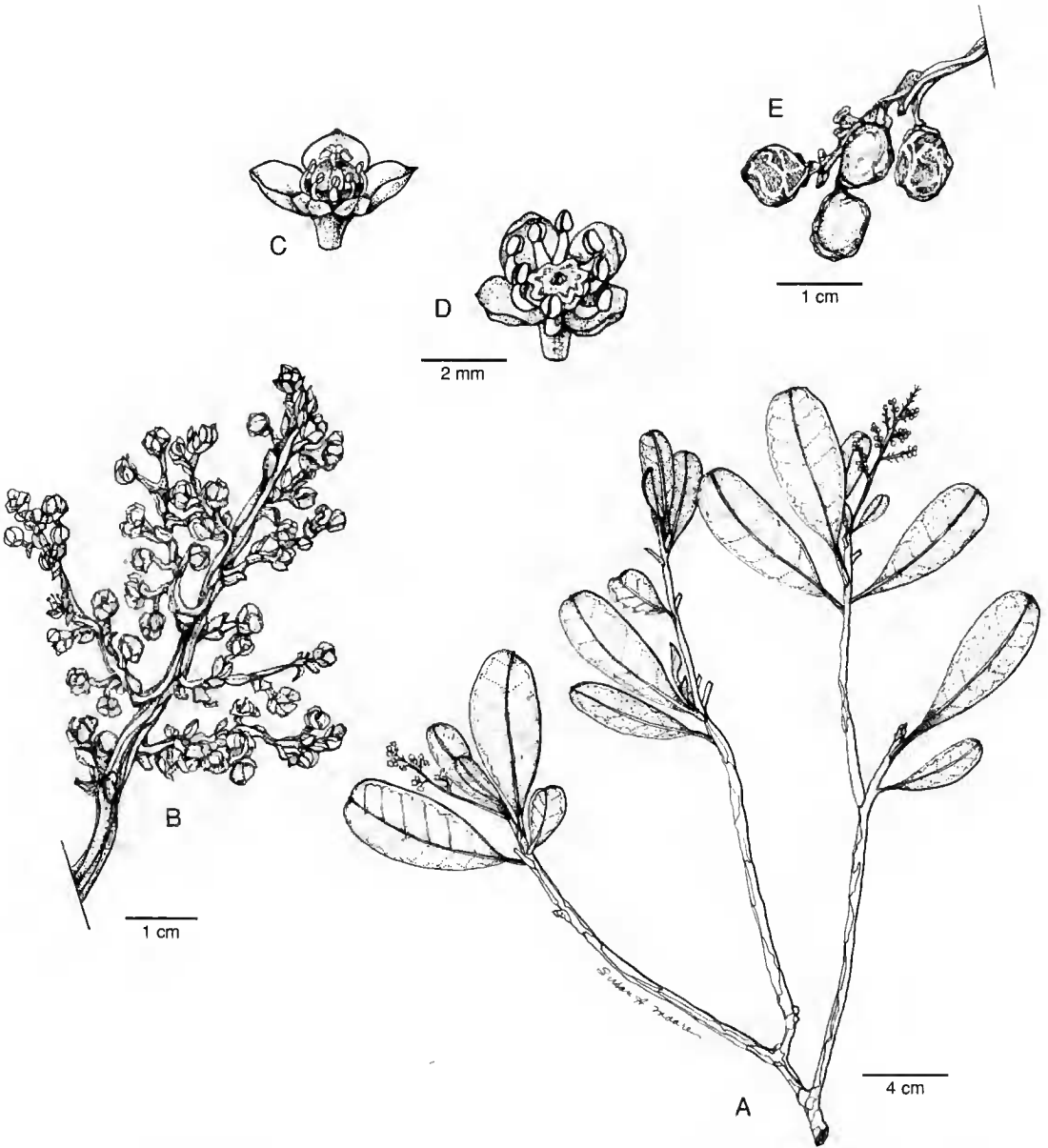


Fig. 3.—*Camptosperma schatzii*: A, branch with leaves and inflorescence; B, inflorescence; C, female flower; D, male flower; E, fruits.

collections and work on the flora of Madagascar have added greatly to our present knowledge.

PARATYPES.—MADAGASCAR: *Louvel 38*, Toamasina: Tampina, forêt littorale orientale, 25 Oct., fl. (P); *Louvel 51*, forêts côtières de l'Est, fl. (P); *McPherson 16545*, near Andasibe, forest of Mantadia, beyond graphite mine, on ridge above road from km 14, 18°55'S, 48°25'E, 1200 m, 8 Nov. 1994, fl. (MO, P, TAN); *RN 8064*, Antsiranana: Antalaha, Ambohitralanana, 15 Dec. 1956, fl. (P, TAN, TEF); *SF 4269*, Fénérive-Est, Tampolo, 27 Nov. 1951, fl. (P, TAN, TEF); *SF 6462*, Tampina - Ambila Lemaitso, 27 Dec. 1952, fr. (P, TAN, TEF); *SF 8979*, *Capuron*, forêt orientale: bassin de la Fananehana, massif de l'Androna, vers 600 m, fr. (P-2 sheets, TAN, TEF); *SF 9039*, *Capuron*, forêt orientale: environs du col d'Antandrokolaka, (entre Amboditavolo, bassin de la Fananehana et Morafeno, bassin de la Rantabe), vers 550 m, fr. (P, TAN, TEF); *SF 11448*, *Capuron*, Centre: massif du Manongarivo: Bekolosy, vers 1200 m, 13 Nov. 1954, (P-2 sheets, TAN, TEF); *SF 12478*, Tampolo, Canton Ampasina, district Fénérive Est, 3 m, 13 Nov. 1954, fl. (P-2 sheets, TAN, TEF); *SF 17816*, Jardin Botanique n°21 Tampolo, Fénérive Est, 3 m, 3 Dec. 1957, fl. (P, TAN, TEF); *SF 22106*, *Capuron*, Est: forêt de Mangalimaso (sur latérite), à l'ouest de Foulpointe, 23 Nov. 1962, fl. (P, TAN, TEF); *SF 26820*, *Capuron*, Ankazomanitra, PK 45 Moramanga Anosibe, Canton Anosibe, district Moramanga, forêt sèche, 9 Nov. 1968, fl. (MO, P, TAN, TEF); *SF 28156*, *Capuron*, Est: massif boisé de Marozevo (Beforona), 23 Jan.

1968, fr. (MO, P, TAN, TEF); *SF 28463*, *Capuron*, Est (confins du Centre): forêt à mousses et sous-bois herbacé aux environs ouest du village d'Antanandava (P.K. 45 de la route Moramanga-Anosibe), Nov. 1968, fl. (MO, P, TAN, TEF); *Thouars s.n.*, no locality, sterile (P).

Acknowledgement

George SCHATZ was the first to point out the problems with the taxonomy of *Campnosperma* in Madagascar and we thank him for his input. We also thank Simon MALCOMBER for his valuable comments, Roy GÉREAU for providing the latin description, Mary MERELLO for her help with the SEM work, and to Susan A. MOORE for the illustrations. We are grateful to the staff of the Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, Paris, for making specimens available for study, both by loan and during visits.

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